Wave&TidalEnergy NETWORK

COMMUNICATION HUB FOR THE WAVE & TIDAL ENERGY INDUSTRY

UNDERWATER NOISE

SPOTLIGHT ON... IRELAND

Innovations

SUMMER 2015 | £7.50

REAL WORLD APPLICATIONS

To begin with, ForeCoast Marine has been applied to a major tidal array which is under development in UK waters. It is anticipated that the tool will be applied to EMEC's international wave and tidal test facility in Orkney, as well as to several offshore wind facilities in UK and European waters in the coming months.

Although the focus of the development work has been on the application to the marine renewables sector, the generic nature of the software's framework ensures that it can be applied to any marine operation which requires a comprehensive understanding of metocean conditions and their potential impact on activities.

INNOVATION LESSONS LEARNED

Key lessons have been learned through the development of ForeCoast Marine…

- **Understand your market** – when developing a new product, it is essential to understand the needs of your potential clients. Connecting with policy makers, technology and project developers and investors is a good start.
- **Build on core skills** – when entering a new market, build on your core skills to enter the market in a strong position with minimal risks.
- **Innovate** – as newcomers to the marine renewables sector, innovation was essential in order to gain a place at the table. Focusing on developing improved techniques to meet the needs of the market and surpass the competition.
- **Be tenacious** – diversification into new markets requires significant drive, along with the dedication of staff to see it through. The process takes time and commitment, but can reap significant rewards.

- **Network and collaborate** – collaboration allows gaps in knowledge to be bridged, and boosts your company profile through the association with established and respected organisations.
- **Take a long term view** – it is essential to look at the long-term viability of products and services that you develop. We determined that the metocean planning tool can be applied to all stages of marine renewable projects – from planning, all the way through to decommissioning.
- **Utilise third party funding.** The costs and risks of entering a new market can be minimised by utilising third party funding where possible. Potential private sector clients may see significant benefits of your proposed product, but the early stage development (i.e. feasibility) might not fit with the companies' risk profiles. Funding from InnovateUK and Scottish Enterprise has been instrumental in reducing this early stage development risk and has allowed the company to progress rapidly along the product development process.

Mark Lawless
JBA Consulting

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FOUNDING PARTNER

Tidal energy available anywhere and less expensive than offshore wind!

Renewable Devices Marine has revolutionised the generation of clean offshore energy with the development of the Capricorn Marine Turbine.

A WORLD FIRST

This unique tidal stream turbine has allowed the company to make available, for the first time anywhere in the world, a technology which offers reliable tidal electricity generation at a cost lower than offshore wind.

The technology can generate electricity from average tidal areas found all around the UK and worldwide, rather than in a select few hard to access environmentally sensitive, high flow sites. This breakthrough will allow tidal energy to become the primary renewable energy contributor by 2025.

OVER-ENGINEERED AND EXPENSIVE DEVICES

The rush for 'high tech' solutions in the marine energy industry however has led to the development of very expensive and complicated devices. In addition to this, almost all developers have to date sought to extract energy from the highest flow sites available, such as the Pentland Firth.

These two factors have led to the development of over-engineered and expensive devices being deployed in the most hazardous and demanding marine environments.

All a little unnecessary when the machines themselves can be designed and manufactured with a great deal less inherent complexity and deployed in sites which have lower speed flows and so lower forces on the turbines.

DESIGN PHILOSOPHY

This is the cornerstone of the design philosophy for the Capricorn Marine Turbine range – 50 kW and 1.25 MW, twin rotor devices optimised for simple deployment and efficient energy extraction across a range of tidal flows.

The UK's Energy Technology Institute show the existing cost of energy from tidal generation to be approximately £300/MWh. By comparison, offshore wind currently costs approximately £133/MWh.

ACHIEVABLE REALISTIC ENERGY COST

The innovative design of the Capricorn Marine Turbine means that a cost of under £128/MWh is achievable. This is due to the turbines ability to operate invisibly in easily accessible low flow areas that are not environmentally sensitive and are close to the populations that need the energy.

The Capricorn Marine Turbine can generate clean and reliable tidal energy at half the cost of current tidal generation and less expensive than electricity from offshore wind turbines.

Dr David Anderson
Renewable Devices Marine Ltd